REMARKS

Claims 1 through 31 remain pending. In response to the Office Action, dated April 9, 2003, claims 1, 4, 14, 29 and 31 have been amended. A petition for one month extension of the period for response, with appropriate fee charge authorization, has been filed herewith. Care has been taken to avoid the introduction of new matter. Favorable reconsideration of the application as now amended is respectfully solicited.

All rejections made in the Office Action of October 28, 2002 have been repeated and are summarized as follows: claims 1 through 8, 14 through 21, 28 and 30 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. patent 5,894,362 (Onaka); claims 9 through 11 and 22 through 24 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Onaka in view of Kinoshita '366; claims 12 and 25 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Onaka in view of Clapp; claims 13 and 27 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Onaka in view of the Inoue publication; claim 26 has been rejected as being unpatentable under 35 U.S.C. § 103(a) over Onaka; and claims 29 and 31 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Onaka in view of Becker. The statement of the rejections is the same as presented in the earlier Office Action.

Each of the rejections of record relies on Onaka as the primary prior art reference. In the section "Response to Arguments," the Office Action maintains that the gain equalizer of Onaka must function in the same manner as the optical filter required by the claims. Independent claim 1 has been amended to recite, *inter alia*,:

> an optical filter capable of changing a gradient $dL/d\lambda$ of a loss L (dB) with respect to a wavelength λ (nm) in the predetermined wavelength band in response to a change of the gain wavelength dependence in the optical amplification section(s); and

> control means for controlling each optical pumping light output from said optical pumping light source(s) so as to keep the total power of light output from said optical amplifier at predetermined level and adjusting controlling the gradient $dL/d\lambda$ of said optical filter so as to flatten the wavelength dependence of light power output from said optical amplifier.

Independent claims 14, 29 and 31 recite similar requirements. The requirement for "controlling the gradient $dL/d\lambda$ of said optical filter so as to flatten the wavelength dependence of light power output from said optical amplifier" makes it clear that the optical filter dynamically controls the gain of optical amplifier and the gradient $dL/d\lambda$. How the gradient $dL/d\lambda$ (which is defined in the description from page 36, line 26 to page 38, line 15 with reference to Fig. 13) is determined is disclosed in the description from page 7, line 7 to page 8, line 19.

In Onaka the flat gain of the optical amplifier is obtained by controlling the power of pumping light (see column 10, lines 24 to 29) and the gain equalizer controls the optical output power in each channel to become substantially constant (see column 12, lines 1 to 16). However, *how* the gain equalizer makes the optical output power in each channel becomes substantially constant is not disclosed. In contrast, according to the present invention as now recited in claim 1, total power of the light after the amplification is kept at the predetermined level by controlling the power of pumping light and the wavelength-dependence will be flattened by the optical filter. Onaka does not disclose or suggest the technique controlling $dL/d\lambda$.

It is submitted, therefore, that all claims are patentably distinguishable as Onaka, taken alone or in combination with the other applied references, would not have provided the artisan with motivation to provide this claimed feature. Becker discloses the flat gain having 40 nm wavelength band. However, this flat gain is achieved when the gain of amplifier is fixed. In contrast, the present invention keeps flat output when the gain of amplifier changes dynamically.

Furthermore, it is not necessary to resolve dL/dλ for controlling the optical filter. The optical amplifier is able to flatten the wavelength dependence of light power by controlling the loss of the optical filter in response to the optical power of inputting light to this optical filter.

The Examiner stated that there is no functional difference between compensating for the gradient DL/dl and the gain slope. However, if there is no functional difference, it is difficult to dynamically change the gain slope with high S/N. With the present invention he wavelength-dependence can be flattened dynamically.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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